



# **MBTA 2023 System-Wide Passenger Survey**



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*Prepared by the Office of  
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# Executive Summary

The Massachusetts Bay Transportation Authority (MBTA) regularly surveys its riders to understand who rides the bus, subway or light rail, Commuter Rail, and the ferry. The MBTA's rolling System-Wide Passenger Survey, often referred to as the "Rider Census," represents the diversity of people who ride MBTA services and is an important tool in planning for bus, rail, and ferry services in the Greater Boston region. In 2022, the MBTA initiated an annual survey to collect information about who is using the transit system and which services they rely on. The MBTA is required to collect this information by the Federal Transit Administration (FTA) to ensure that the changes to the system, service, and fares equally benefit people, regardless of their income levels or race and ethnicity. In addition to ensuring equity in transit, the MBTA uses results from the rolling Rider Census to understand how people move through the system to better plan improvements. This report marks the second year of annual survey results and offers data from the last two years as a single, pooled dataset with more station- and route-level disaggregation than in the calendar year 2022 (CY22) data release.

Data is collected annually from spring through late fall, and data will typically be available mid-spring of the following year. The documentation included on this page represents data collected in calendar year 2023 (CY23) and provides context and guidance to understand and use the rolling Rider Census data. The technical documentation may assist those who are looking to more deeply understand the data calculation and aggregation process. The data is available for download on the MBTA Open Data Portal.

## Survey Background

Pursuant to Title VI of the Civil Rights Act of 1964 and in line with guidance from the Federal Transit Administration (FTA) circular FTA C 4702.1B, the MBTA must conduct regular evaluations of its system to ensure equity across income levels and race and ethnicity demographics. Additionally, major changes in service or fares must be evaluated to ensure they do not disproportionately impact populations protected on the basis of race or ethnicity, or disparately burden lower income riders (see the [MBTA Service and Fare Change Equity Policy](#) for details).

Previous versions of the Rider Census, conducted once every five years, reflected point-in-time snapshots of rider demographics; the last such survey was conducted in 2016. As of 2022, the MBTA conducts an ongoing, or "rolling," Rider Census, which collects data annually from a smaller sample of riders across the T. This shift to more frequent data collection allows for a more accurate understanding of who travels on bus, rail, and ferry services. For example, a rolling survey format allows riders of new services to be counted sooner, which enables the MBTA to include riders of new services – like the East Boston Ferry (opened 2022) or the Medford Brand of the Green Line Extension (opened 2023) – in its planning and analysis, rather than having to wait up to five years to survey riders of new services.

In addition to Title VI equity analyses, the results of the Rider Census are used across the T in capital planning, service planning, fare policy, and public outreach planning. Among



other benefits, this survey model means that pilot programs can be evaluated using demographic data collected through a methodologically consistent effort.

## Methods: Data

To ensure that the MBTA surveyors talk to a sample of transit riders that accurately reflects the people riding specific services and traveling between specific stops or stations, the rolling Rider Census research team developed a sampling plan that allows for accurate representation of the system every five years. This means that, during the first five years of the new rolling Rider Census data may be summarized at a more aggregate level than that of previous system-wide surveys. With each additional year of data collection, the MBTA will be able to share more granular data, specific to individual routes and stations.

Detailed information about the rolling Rider Census sampling plan and response weighting may be found in Chapters 2 and 3 of the technical documentation, respectively.

The rolling Rider Census sampling plan was constructed to allow reporting at a similar level of aggregation to 2015-17 by the end of the first five years of data collection. This means that the collection of rolling Rider Census data collected through calendar year 2026 will provide data aggregated at a similar level as the 2016 Rider Census data release.

Prior to the 2026 data release, survey data will be publicly available at a higher level of aggregation than in years past. Specific aggregation by service mode is as follows:

- Heavy rail will generally be reported by station or small group of stations
- Light rail will generally be reported by station or small group of stations for the Green Line, and the Mattapan Trolley will be reported for the whole branch
- Bus will be reported individually or in small groups for high-ridership routes and in larger geographic groups for moderate and low-ridership routes
- Ferry data will be reported in one group, consisting of all routes
- Commuter Rail reporting is aggregated to the individual line

Responses to the rolling Rider Census survey are weighted by both ridership (how many people ride that particular service) and transfer rate (how many people make similar transfers as reported in the survey). This ensures that conclusions drawn from survey data are as representative as possible of overall MBTA ridership.

It is important to note that all survey research and data collection is exposed to some level of bias and error. The MBTA acknowledges that sampling bias may have been introduced by a series of factors, including but not limited to:

- Weekday only surveying, between 7:00 AM and 7:00 PM
- The need to survey high-ridership locations in order to meet minimum response requirements for statistical validity of reporting
- Limited range of languages available
- Survey respondents' potential lack of awareness of available languages



## Survey Findings

The two-year pooled dataset from 2022 and 2023 data collection indicates that 57% of riders system-wide self-identified as being a woman, with women comprising the majority of riders for every service mode as well, ranging from 50% of riders on ferry service to 58% of riders on Orange Line service. On the system level, 61% of riders surveyed self-identified as being part of class protected on the basis of race or ethnicity.

One key policy change from the past year impacted the data of riders whose incomes the MBTA categorizes as “low-income.” In spring of 2023, the MBTA changed the Service and Fare Change Equity Policy to raise the “low-income” threshold from 60% of the Area Median Income (AMI) to 80% AMI. This more conservative threshold, in conjunction with U.S. Census Bureau income data for 2022, essentially raised the low-income threshold by \$25,000 compared to last year’s data release. In 2022, 48% of respondents self-identified as low-income. This proportion jumped to 75% in the 2022 and 2023 pooled dataset.

Detailed information about rider demographics may be found in the technical documentation or the interactive web tool.

## Next Steps

We expect to repeat this data collection and release cycle on an annual basis. Rider surveying for calendar year 2024 will result in a public data release in spring 2025. If you have any questions or comments, please reach out at [opmi@mbta.com](mailto:opmi@mbta.com).



# Background

## 1.1 Objectives and Reasons for Conducting the System-Wide Survey

The Federal Transit Administration (FTA) Title VI Circular (C 4702.1B) requires large transit providers to collect demographic, travel, and fare payment data about their riders using passenger surveys at least every five years. In addition, results of past MBTA passenger surveys have provided essential data to many different users, including the MBTA, Central Transportation Planning Staff (CTPS), consultants, other transportation agencies, academic researchers, and members of the public. The results of the Rider Census will be used not just in Title VI analysis (as mandated by the Federal Transit Administration), but across the T in capital planning, service planning, fare policy, and public outreach planning. This survey also tends to be our largest survey effort with the largest sample size, including riders from every single fixed-route mode, so questions beyond demography are included to be used in analysis across the T; for example, to understand station access or to assess differences in fare product usage across modes.

## 1.2 Changes to the Methodology

2023 was the second year of collecting data under the rolling Rider Census rather than discrete surveys. This allows the T to have a consistently fresher, more accurate understanding of who uses its system. The sampling and publishing plan allows for annual publication of meaningful data within months of the end of the year and importantly, it allows for more responsiveness in survey methodologies; if a new service comes online, or if significant changes are made to an existing service, the survey team can adjust the sampling plan to collect demographic data that reflects these changes. With a traditional census, it would take up to 5 years for data to reflect these changes, which limits understanding of rider makeup.

To provide statistically adequate data at the level of individual rail stations or bus routes, we pool data from multiple years of the rolling survey, similar to the U.S. Census Bureau's American Community Survey 3- and 5-year pooled datasets. Consequently, the CY22 and CY23 data releases of the system-wide survey do not show change in passenger demographics from year to year, but rather show an aggregate of demographic data from both years that allows us to report on distinct services for which we could not collect a large enough sample size in a single year.

## 1.3 Survey Content

The survey forms distributed on all modes – rail, bus, Commuter Rail, and ferry – included the same set of questions pertaining to a respondent's demographic information and most recent trip on the MBTA.



The survey was designed to obtain the following kinds of information:

- Demographic characteristics, including: race, ethnicity, English proficiency, gender, age, and household income
- Non-English languages used at work or home
- Number of usable vehicles in household and vehicles per capita in household
- Trip purpose
- Origin/destination locations
- Modes of access and egress
- Fare and fare payment method
- Frequency of making the reported trip using the MBTA
- Other characteristics, as required for federal reporting

The survey was primarily distributed via an intercept-based tablet survey, meaning surveyors talked with riders on the system and asked riders to complete the survey on a provided tablet. In addition to English, survey forms were available in Arabic, traditional Chinese, simplified Chinese, Cape Verdean Creole, French, Italian, Haitian Creole, Portuguese, Russian, Spanish, and Vietnamese. A paper version of the survey in English, Spanish, and simplified Chinese was available upon request. 1.9% of surveys were completed in the non-English versions.

The tablet-based distribution method enabled translation into more languages than a paper-based method. It also allowed for respondents who did not feel comfortable taking the survey digitally to have a surveyor input their responses, provided the respondent spoke English or another language spoken by a surveyor on-site.



# Sampling Plan

This section describes the MBTA's data collection in preparation for the CY23 Rider Census demographic data release. This document summarizes the reporting groups for the CY23 release, the initial sampling plan, and changes to the sampling plan made in response to events impacting response collection, including the fare-free Blue Line service during the Sumner Tunnel closure.

## 2.1 Reporting Groups

The five-year reporting groups (i.e., groups for which data will be available after 2026) for all modes were constructed to be comparable to reporting groups from the previous Rider Census (2015-2017). The purpose of creating these groups prior to data collection was to ensure that sufficient data is collected each year to eventually meet independent reporting response requirements.

Stations (for the rail system) or routes (for the bus and ferry systems) were grouped into three ridership categories for purposes of creating five-year and one-year reporting groups. These ridership categories were initially developed based on 2021 ridership values but are subject to change based on observed overall changes in MBTA ridership. Services were classified as: low-ridership if they had fewer than 800 average weekday boardings; moderate-ridership if they had between 800 and 3,500 average weekday boardings; and high-ridership if they had over 3,500 average weekday boardings.

The sampling plan was constructed in order to report high-ridership services independently after the first year of data collection and moderate- and high-ridership services independently after the fifth year of data collection. Last year, low- and moderate-ridership services were placed into groups for the first-year data release. For this second year, more services were able to be reported independently than the initial data release.

The exact method for construction of these groups depends on mode. Bus groupings used fare transaction data to calculate the proportion of riders on each route who also used other routes in the system and grouped routes likely to be used by the same riders. Light rail groupings used historical demographics to minimize demographic variation within each reporting group.

## 2.2 Initial Sampling Plan (2023)

Using the reporting groups as defined above, response targets, or the number of survey responses required, were set for each station and route in order to collect enough data to report demographics for a single reporting group. These response targets were then translated to survey location targets, or the number of responses needed at a specific survey site. This process was done slightly differently for each mode. For the heavy rail system, ridership is high enough to allow for reporting at the station level with a single year of data, so the response target for each station matched the survey location target. Due to relatively



low ridership at outlying Commuter Rail and light rail stations, survey efforts were focused on downtown stations for these modes in 2022, and surveying expanded outward along each line in 2023 to supplement continued downtown surveying.

The process of translating total response targets to site-specific surveying targets was most complex for bus services. Stop-level ridership was evaluated in conjunction with the proportion of riders traveling somewhere other than a station busway (to prioritize riders that were unlikely to be encountered during surveying of other modes), stop amenities, and whether a stop was likely to have riders that differ significantly from other stops being surveyed.

Route-level targets were then proportionally assigned to stops selected by this process. Then, this selection process was iterated, considering factors like the number of locations selected for each route (more locations per route leads to a more balanced sample, but there is an upper limit for number of locations that are reasonable to survey).

## 2.3 Changes to Sampling Plan

Detailed sampling plans for light rail, bus, Commuter Rail, and ferry were created after the heavy rail system had been surveyed. Accordingly, response targets for these modes were adjusted downwards based on the number of responses on these modes that had been collected during the heavy rail survey effort.

Student ridership during the summer months is different from that during the school year for certain routes and stops in the City of Boston, reflecting lower overall travel and travel more evenly spread throughout the day, day of week, and geographic location within the system. Therefore, a restriction was placed on sampling at heavy rail, light rail, and bus locations in the City of Boston during the summer months.

As the MBTA continues to conduct major rail maintenance efforts, the sampling plan changes throughout the year to account for multi-day or multi-week shutdowns of rail service. The method for sampling plan revision consists of avoiding stations directly impacted by the diversions, as the percentage of riders who opt to use the shuttle buses replacing rail service is relatively low. Where bus routes intersect with the diverted line (or otherwise have high rates of transfer to the diverted service), efforts are made to limit the amount of data collected on these routes and instead focus efforts on routes that are less impacted by the shutdown. The expected level of impact is determined by looking at the percent of riders on each bus route (based on fare transaction data) that also took the diverted line over a given time period. Routes and bus stops with lower proportions of riders on the diverted line were prioritized during the shutdown.

After visiting each survey location for the originally planned number of surveyor-days, the Rider Census team made weekly schedules based on gaps in the initial round of data collection. These schedules were based on the number of responses collected initially and the quality of those responses. In certain cases, new survey locations were identified when the initial survey locations were not sufficient to meet targets on a given route. For example, the relatively low ridership on the Fairmount Line meant that collecting sufficient respons-



es at South Station was difficult. In response, several outlying stations on the Fairmount Line were selected for additional sampling, enabling the survey target to be successfully achieved.



# Survey Weighting

## 3.1 Introduction and Reasons for Weighting

Survey responses were weighted to ensure that reported values are as representative as possible. Riders of certain services were intercepted at different rates than riders of other services. To reach a statistically valid sample size for a high-ridership service, it is not necessary to intercept the same proportion of riders as would be necessary on a lower ridership service. In addition, variation in response rate between services results in different numbers of responses, even given the same number of surveyor-days spent at a particular location. These reasons necessitate weighting the survey responses by ridership, which enables the calculation of mode- and system-wide demographics in addition to the calculation of specific reporting group demographics.

The survey distribution has an unavoidable bias towards interacting with transferring riders. This is because riders of a particular service might be intercepted while at a boarding location not associated with that service. For example, riders of the 1 bus were specifically targeted at several boarding locations for that service, including Nubian Square, Hynes Convention Center, and Central Square. However, those riders might also be intercepted while at a location not directly served by the 1 bus. For example, a rider who boarded the 1 bus at Central Square, transferred to the Orange Line at Massachusetts Avenue, then transferred to the Blue Line at State might be intercepted at Central Square, Massachusetts Avenue, or the Blue or Orange Line platforms at State. However, a similar rider that made a one-segment trip from Central Square to Washington Street could only be intercepted by a surveyor who happened to be at those locations. For this reason, survey responses were also weighted by the transfer rate on each service.

Each survey response contained information on a recent trip taken by the respondent. This information was used to assign respondents to one or more MBTA services. Each respondent's reported trip was reversed in order to assign their demographics to both boarding and exit stations for the rail system. Then ridership and transfer weights were assigned to each reported or reversed segment. Following that, weighted counts for each measure were summed to the reporting group level. Then, these reporting group totals were summed to report demographics at the mode and system-wide levels.

## 3.2 Calculation of Ridership Weights

Surveys were conducted on weekdays. A small proportion of trips (less than 1%) were self-reported as weekend trips. These weekend trips were included in calculations, but due to their relative infrequency, values were weighted using average weekday unlinked passenger trips for 2023 as the measure of ridership. Values should therefore be interpreted as corresponding to weekday demographics. Data source varies by mode depending on what is most reliable and available for the given mode. Certain time periods are excluded from the calculations for all modes; this was done if service was different enough from typically operated service that either: 1) ridership patterns were sufficiently disrupted across modes; or 2) automated data



collection was not generally reliable for that time period. Certain time periods were excluded for individual modes if service was disrupted on that mode but unlikely to affect typical behavior on other modes.

**Table 1 Aggregation Levels**

Mode	Aggregation Level	Examples
Heavy Rail	Line - Station	Red Line - Downtown Crossing; Orange Line - Stony Brook
Light Rail	Line - Stop	Mattapan Trolley - Capen Street; Green Line - Arlington
Silver Line	Route	SL1
Bus	Route	111
Commuter Rail	Line	Haverhill Line
Ferry	Route	Charlestown Ferry

### ***Calculation of Heavy Rail and Green Line Ridership***

Heavy rail and Green Line data came from the MBTA's Origin-Destination-Transfer (ODX) model outputs. This model processes many of the MBTA's automated data feeds including Automated Fare Collection (AFC), Automatic Passenger Counters (APC), and Automatic Vehicle Location (AVL) data. Using these sources, the model estimates passenger transfers within the transit system. Summaries of these movements provide counts of total boardings at specific locations on specific routes.

Boarding values at each heavy rail and Green Line station were averaged across weekdays in 2023, excluding dates on which significant disruptions affected ridership or the automated data collection process. Green Line boardings were assigned to stations, rather than assigned to each branch at that station. For example, instead of summarizing Green Line B, C, D, and E boardings at Arlington separately, all Arlington Green Line boardings were grouped together.

### ***Calculation of Mattapan Trolley Ridership***

Because Mattapan Trolley vehicles are not equipped with APCs, ODX is less reliable for calculating ridership on this service. Currently, manual counts provide the best source for ridership on the Mattapan Trolley. Manual counts were conducted in 2023 and were the source of Mattapan Trolley ridership estimates.

### ***Calculation of Bus and Silver Line Ridership***

Bus and Silver Line ridership was derived from APC-based weekday average boardings by route. The initial dataset was available at the week level. Weeks during significant service disruptions were excluded and weekday averages were calculated for the year. Data for contracted routes operating in Winthrop (712 and 713) is calculated separately from other routes. These data are also APC-based, but come from a different source. Winthrop route data is only available at the month level, so specific dates for these routes cannot be excluded.



### ***Calculation of Commuter Rail Ridership***

Commuter Rail ridership was not available at the stop level. Line-level daily ridership estimates are prepared by Keolis, the MBTA's Commuter Rail operator. Excluding dates covering significant service disruptions, weekday averages were calculated for the year.

### ***Calculation of Ferry Ridership***

Monthly Ferry ridership was summarized to create a weekday average count of boardings by line.

## **3.3 Calculation of Transfer Weights**

Transfer weights were derived from two main sources: ODX data; and the survey results themselves. Because ODX can only be run for modes using the AFC system, it was not possible to calculate transfer rates using ODX for Commuter Rail, ferry, or free bus routes (i.e., the 23, 28, and 29). In addition, ODX-based transfer rates would not account for riders making a transfer from an AFC mode to a non-AFC mode (such as a Red Line to Commuter Rail trip). Therefore, ODX-based transfer rates were calculated when possible, then adjusted to account for the proportion of riders making such transfers. The following section explains how transfer rates were calculated for each mode. It is split by whether the ODX-based transfer rate was used (with adjustments) or if transfer rates were calculated using survey results themselves.

### ***ODX Based Transfer Rate***

Transfer rates were calculated using ODX and then adjusted for heavy rail, gated light rail stations, and bus (excluding free routes). First, the percent of boardings that were or were not part of a multiride trip was calculated for each route – stop pair. Second, this daily value was averaged over the year to result in a single weekday average for every route and stop. Two adjustments then needed to be made. First, because ODX is better able to impute trip information for transferring riders, an assessment of the difference between the ODX-based transfer rate and transfer rate based on Rider Census data was conducted for each mode. ODX-based rates differed from Rider Census-based rates for bus. So, a single correction factor was applied to ODX-based rates to adjust for this bias. Second, ODX-based rates do not account for transfers to modes not on the AFC system. A second correction factor was developed at the stop level for rapid transit and the route level for bus. This correction factor added the percentage of boardings occurring on that route that transferred to a service not in the AFC system and did not also transfer to an AFC service to each stop or route's initial value.

### ***Non-ODX Based Transfer Rate***

Transfer rates for ungated light rail stations, free bus routes, Commuter Rail, and ferry were not calculable from ODX data. For these services, the transfer rates on reported trips for responses collected at boarding locations specific to the service were used. For example, transferring Franklin Line riders are likely overrepresented in the initial survey because



they might be intercepted elsewhere on the system. However, transferring Franklin Line riders that were intercepted at a Franklin Line boarding location are not likely to be over-represented. So, transfer rates were calculated for non-ODX modes based on responses collected at boarding locations specific to those modes.



# Key Findings

## 4.1 Overview

The 2023 System-Wide Passenger Survey generated over 14,000 completed responses. The complete data release, along with an interactive web tool, are available for use on the MBTA Open Data Portal. Please note that percentages may not add to 100% due to rounding.

## 4.2 Demographics

### Age

According to the Rider Census results, 61% of riders are between 18 and 34 years old. This is an increase from 59% in the CY22 Rider Census. From the CY22 Rider Census to the current survey, greater proportions of riders come from the 26 to 34 years of age bracket and the 35 to 44 years of age bracket. Continuing prior trends, riders on the Green Line skews younger and riders on the ferry lines skews older than the system overall. 36% of Green Line riders are between the ages of 18 and 25, compared to 28% system-wide. Ferry riders are primarily between the ages of 35 and 44 (36%) and the ages of 45 and 64 (26%), with those two age groups represented in much higher proportions than the overall system (20% and 11%, respectively). See Table 2 for more information.

**Table 2 Percent of Riders by Age and Service Mode**

Mode	Under 18	18 to 25	26 to 34	35 to 44	45 to 64	65 or older
<b>System-Wide</b>	<b>4%</b>	<b>28%</b>	<b>33%</b>	<b>20%</b>	<b>11%</b>	<b>3%</b>
Rapid Transit or Bus						
Rapid Transit	3%	30%	35%	20%	10%	2%
<i>Blue Line</i>	3%	24%	37%	23%	11%	3%
<i>Green Line</i>	2%	36%	34%	17%	7%	2%
<i>Orange Line</i>	4%	28%	35%	20%	11%	2%
<i>Red Line</i>	3%	30%	34%	20%	11%	2%
<i>Mattapan Trolley</i>	7%	25%	32%	21%	13%	1%
<i>Silver Line BRT</i>	2%	24%	36%	23%	14%	1%
Commuter Rail	3%	27%	31%	23%	13%	3%
Bus	6%	27%	32%	20%	12%	3%
Ferry	2%	8%	22%	36%	27%	6%

### Gender

Riders self-identifying as women continue to make up the majority of all passengers on the system. 56% of passengers self-identified as women, 40% as men, and 1% as non-binary. Women also comprised the majority of riders in the CY22 Rider Census. Additionally, riders self-identifying as women make up the majority of ridership on each individual mode within the system; in the CY22 Rider Census, riders self-identifying as men made up the majority of passengers on the Mattapan Trolley. See Table 3 for more information.



**Table 3 Percent of Riders by Gender and Service Mode**

Mode	Woman	Man	Non-Binary	Other	Prefer not to say
<b>System-Wide</b>	<b>57%</b>	<b>41%</b>	<b>2%</b>	<b>&lt;1%</b>	<b>&lt;1%</b>
Rapid Transit or Bus Rapid Transit	58%	40%	2%	<1%	<1%
<i>Blue Line</i>	58%	40%	1%	<1%	1%
<i>Green Line</i>	58%	39%	3%	<1%	<1%
<i>Orange Line</i>	58%	40%	1%	<1%	1%
<i>Red Line</i>	58%	40%	2%	<1%	<1%
<i>Mattapan Trolley</i>	50%	50%	0%	<1%	0%
<i>Silver Line BRT</i>	52%	46%	1%	0%	<1%
Commuter Rail	54%	43%	2%	0%	1%
Bus	57%	41%	2%	<1%	<1%
Ferry	50%	49%	1%	0%	0%

### ***Annual Household Income***

Household income brackets used in this survey are calculated as a percentage of Area Median Income (AMI) available through the U.S. Census Bureau’s American Community Survey (ACS) five-year datasets, and are updated each year using the latest available ACS dataset. In addition to the annual update of the AMI value used, in 2023 the MBTA’s Service and Fare Change Equity Policy was updated and changed the cutoff for a rider to be considered “low-income” from 60% of the AMI in the MBTA service area to 80% of the AMI in the MBTA service area. For the CY22 data release, the service area AMI was \$93,000, and the low-income threshold was \$56,000. For the new CY23 Rider Census, the service area AMI is \$102,000, and the low-income threshold was \$81,500.

75.0% of riders system-wide self-identified as low-income in the CY23 Rider Census. This is a significant increase from 48.4% of riders in the CY22 Rider Census. The Mattapan Trolley had the highest proportion of riders self-identifying as low income, with 88.3%. Only ferry service had a majority of passengers who did not self-identify as low income; 36.0% of ferry passengers self-identify as low income. See Table 4 for more details.



**Table 4 Percent of Riders Self-Identifying as Low-Income by Service Mode**

Mode	Yes
<b>System-Wide</b>	<b>75%</b>
Rapid Transit or Bus	
Rapid Transit	72%
<i>Blue Line</i>	79%
<i>Green Line</i>	73%
<i>Orange Line</i>	72%
<i>Red Line</i>	69%
<i>Mattapan Trolley</i>	88%
<i>Silver Line BRT</i>	68%
Commuter Rail	60%
Bus	83%
Ferry	36%

**Table 5 Percent of Riders Self-Identifying as Minority by Service Mode**

Mode	Yes
<b>System-Wide</b>	<b>61%</b>
Rapid Transit or Bus	
Rapid Transit	59%
<i>Blue Line</i>	62%
<i>Green Line</i>	53%
<i>Orange Line</i>	62%
<i>Red Line</i>	58%
<i>Mattapan Trolley</i>	74%
<i>Silver Line BRT</i>	61%
Commuter Rail	47%
Bus	70%
Ferry	24%

### ***Populations Protected on the Basis of Race or Ethnicity***

The MBTA Service and Fare Change Equity Policy defines Populations Protected in the Basis of Race or Ethnicity as people who self-identify as a race other than white or who self-identify as Hispanic or Latine. System-wide, 61% of respondents were classified as protected on the basis of race or ethnicity based on responses to questions pertaining to race and ethnicity. This is a slight increase from 58% in the CY22 Rider Census. The proportion of riders self-identifying as a race other than white or self-identifying as Hispanic or Latine increased or remained level for all modes, with the largest increase seen in Commuter Rail and ferry service, both increasing by 9 percentage points from the CY22 survey. See Table 5 for more details.

53% of respondents self-identified as a race other than white, and 4% respondents preferred not to self-identify their race. System-wide, respondents self-identifying as a race other than white made up the majority of riders on Orange Line, Mattapan Trolley, and bus services. The Mattapan Trolley was the only service where the majority of respondents self-identified as Black or African American. See Table 6 for more details.



**Table 6 Proportion of Self-Identified Race and Ethnicity by Service Mode**

Mode	American Indian or Alaska Native	Asian	Black or African American	Middle Eastern or North African	Native Hawaiian or other Pacific Islander	White	Other	Prefer not to say
<b>System-Wide</b>	<b>3%</b>	<b>14%</b>	<b>28%</b>	<b>3%</b>	<b>&lt;1%</b>	<b>51%</b>	<b>5%</b>	<b>4%</b>
Rapid Transit or Bus Rapid Transit	3%	15%	23%	3%	<1%	54%	6%	4%
<i>Blue Line</i>	4%	8%	14%	4%	<1%	59%	10%	9%
<i>Green Line</i>	3%	18%	18%	3%	<1%	59%	4%	3%
<i>Orange Line</i>	3%	15%	27%	3%	<1%	49%	6%	5%
<i>Red Line</i>	2%	17%	26%	2%	<1%	51%	4%	3%
<i>Mattapan Trolley</i>	<1%	3%	64%	2%	<1%	31%	4%	1%
<i>Silver Line BRT</i>	4%	14%	20%	2%	1%	56%	7%	4%
Commuter Rail	2%	12%	22%	3%	<1%	61%	5%	2%
Bus	4%	12%	37%	3%	<1%	43%	5%	4%
Ferry	5%	4%	8%	1%	0%	87%	<1%	2%

### Vehicles per Household

Overall, 42% of respondents said their household does not own a vehicle, consistent with the CY22 survey (41%). Across modes, the proportion of zero-vehicle households remained relatively stable from the CY22 Rider Census, with the exception of Commuter Rail; 23% of Commuter Rail riders said they come from a household without a vehicle, an increase of eight percentage points. For the second year in a row, the most common response was that the respondent came from a zero-vehicle household.

**Table 7 Vehicles per Household Percentages by Service Mode**

Mode	0	Strictly between 0 and 0.5	Strictly between 0.5 and 1	1 or more	Other* <sup>1</sup>
<b>System-Wide</b>	<b>42%</b>	<b>30%</b>	<b>4%</b>	<b>8%</b>	<b>17%</b>
Rapid Transit or Bus Rapid Transit	43%	27%	4%	9%	17%
<i>Blue Line</i>	45%	30%	3%	7%	16%
<i>Green Line</i>	46%	24%	4%	8%	18%
<i>Orange Line</i>	40%	29%	3%	10%	18%
<i>Red Line</i>	42%	26%	4%	10%	18%
<i>Mattapan Trolley</i>	44%	33%	4%	5%	0%
<i>Silver Line BRT</i>	39%	28%	4%	13%	17%
Commuter Rail	23%	29%	6%	15%	26%
Bus	45%	33%	3%	4%	14%
Ferry	6%	43%	6%	15%	0%

<sup>1</sup> \*The "Other" category is comprised of respondents who indicated that their household has at least one usable vehicle, but for whom a vehicles per capita ratio was unable to be calculated



## 4.3 Trip Purpose

Trip purpose was determined by the answers to the questions “Where did this trip start?” and “Where did this trip end?” Trips that started or ended at home were classified as home-based trips, with the trip purpose determined by the type of place at the non-home end of their trip. Trips that neither started nor ended at home were classified as non-home-based trips.

### *Trip Purpose and Frequency by Service Mode*

Overall, trip purpose remained mostly unchanged from prior years. System-wide, 90% of trips were home-based, nearly identical to the previous survey (90%). For the most part, this was also seen at the mode level as well. Somewhat interestingly, though the overall number of home-based trips was largely unchanged for the Commuter Rail, there was a small shift from Home-based Work and Home-based School trips to Home-based Social Activity and Home-based Other trips. 61% of Commuter Rail trips were either Home-based Work or Home-based School, and 31% were Home-based Social Activity or Home-based Other; in the CY22 Rider Census, the results were 69% and 23%, respectively. This shows that people are continuing to use the Commuter Rail in new ways post COVID-19 relative to the traditional “commuting” purposes. See Table 8 for more information.

The most common reported trip frequency type are trips that occur five days per week (40%), which aligns with CY22 Rider Census data (41%). The largest change was seen in the six to seven days per week response, with only 7% of trips surveyed happening with that frequency, down from 10% in CY22. Six to seven days per week was the least common response in the CY23 Rider Census, while there were two less frequent response categories in CY22. See Table 9.

**Table 8 Trip Purpose by Service Mode**

Mode	Home-based Work	Home-based School	Home-based Social Activity	Home-based Other	Non-home Based
<b>System-Wide</b>	<b>54%</b>	<b>10%</b>	<b>9%</b>	<b>17%</b>	<b>10%</b>
Rapid Transit or Bus Rapid Transit	54%	11%	9%	16%	11%
<i>Blue Line</i>	59%	6%	8%	17%	10%
<i>Green Line</i>	49%	14%	10%	15%	11%
<i>Orange Line</i>	56%	11%	8%	16%	10%
<i>Red Line</i>	53%	11%	10%	15%	11%
<i>Mattapan Trolley</i>	55%	11%	12%	18%	4%
<i>Silver Line BRT</i>	59%	3%	6%	19%	12%
Commuter Rail	50%	11%	13%	17%	9%
Bus	55%	9%	8%	19%	9%
Ferry	59%	2%	17%	15%	7%



**Table 9 Trip Frequency by Service Mode**

Mode	6 to 7 days per week	5 days per week	3 to 4 days per week	1 to 2 days per week	1 to 3 days per month	Less than once per month
<b>System-Wide</b>	<b>7%</b>	<b>40%</b>	<b>23%</b>	<b>11%</b>	<b>8%</b>	<b>10%</b>
Rapid Transit or Bus Rapid Transit	7%	39%	25%	11%	8%	11%
<i>Blue Line</i>	7%	44%	23%	8%	6%	11%
<i>Green Line</i>	6%	36%	27%	12%	9%	11%
<i>Orange Line</i>	7%	40%	23%	10%	8%	11%
<i>Red Line</i>	7%	38%	25%	11%	8%	11%
<i>Mattapan Trolley</i>	5%	39%	22%	15%	12%	6%
<i>Silver Line BRT</i>	6%	37%	25%	7%	7%	18%
Commuter Rail	3%	28%	23%	15%	13%	17%
Bus	8%	44%	22%	12%	7%	7%
Ferry	3%	32%	22%	21%	6%	17%

## 4.4 Language

Information about language usage of survey respondents was determined through both the languages in which the survey was completed and a question on the survey that asked respondents which language they would prefer to receive information about the MBTA in. Nearly all surveys were completed in English. See Tables 10 and 11.

**Table 10 - Survey Responses by Language**

Language	Number of Survey Responses
English	14,373
Spanish	236
Portuguese	20
Chinese (Simplified)	3
French	14
Haitian Creole	2
Russian	0
Chinese (Traditional)	1
Vietnamese	0
Arabic	0
Italian	0
Cape Verdean Creole	0



**Table 11 - Languages Other Than English Spoken at Home or Work**

Language	Percent of Unweighted Responses
Spanish	2.0%
Chinese	<1%
French	<1%
Portuguese	<1%
Arabic	0%
Haitian Creole	<1%

## 4.5 Alternate Means of Travel

Of riders who reported use of an alternative service to make the same trip surveyed, the most common alternative reported was a different MBTA service (32%). At the mode level, however, there was variation in the most common alternative reported. Commuter Rail and Ferry riders were most likely to drive alone to complete the surveyed trip (50% and 41%, respectively). Blue Line and Silver Line BRT riders were most likely to use a taxi or ride-share company (34% and 43%, respectively). See Table 12 for more information.

**Table 12 Alternate Means of Travel Proportions by Service Mode**

Mode	Different MBTA Service	Drive Alone	Taxi or Rideshare Company	Walk	Drive or Ride in a Carpool	Bike, Scooter, or Other Micromobility	Private Shuttle or Other Transit	Other
<b>System-Wide</b>	<b>32%</b>	<b>25%</b>	<b>27%</b>	<b>17%</b>	<b>20%</b>	<b>7%</b>	<b>3%</b>	<b>1%</b>
Rapid Transit or Bus Rapid Transit	28%	25%	29%	20%	20%	8%	3%	<1%
<i>Blue Line</i>	18%	27%	34%	17%	24%	3%	4%	<1%
<i>Green Line</i>	34%	23%	30%	22%	16%	5%	3%	<1%
<i>Orange Line</i>	30%	27%	28%	20%	19%	7%	3%	1%
<i>Red Line</i>	25%	26%	27%	21%	20%	12%	3%	<1%
<i>Mattapan Trolley</i>	45%	28%	30%	8%	25%	3%	2%	0%
<i>Silver Line BRT</i>	28%	21%	43%	9%	23%	4%	5%	1%
Commuter Rail	29%	50%	13%	5%	24%	1%	3%	1%
Bus	40%	16%	29%	18%	18%	7%	2%	1%
Ferry	36%	41%	6%	8%	8%	4%	0%	0%



# Appendix

## Service Mode Definitions

The MBTA's rapid transit system includes its heavy rail and light rail services, described below.

**Heavy Rail:** The MBTA operates three heavy rail lines—the Red Line, the Blue Line, and the Orange Line—that provide core subway services.

**Light Rail:** The MBTA's primary light rail system, the Green Line, provides local service in outlying areas via its surface operations and core subway services in and around the Boston city center. In addition, the MBTA operates the Mattapan High Speed Line, which serves as a Red Line extension from Ashmont Station to Mattapan Station via light rail.

**Bus:** All rubber-tire vehicles regardless of the vehicle's power source.

**Commuter Rail:** Long-haul, commuter-oriented services that link the outer portions of the region with Downtown Boston.

**Ferry:** Inner Harbor Ferry services for travel between destinations in Boston, and Commuter Ferry services from the South Shore to Downtown Boston and Logan Airport.

## Additional Data Tables

**Table A.1 Fare Type Proportion by Service Mode**

Mode	Monthly Pass	Pay-as-you-go	7-day Pass	Student Pass (M7)	Semester Pass	1-day Pass	Other
<b>System-Wide</b>	<b>40%</b>	<b>34%</b>	<b>18%</b>	<b>3%</b>	<b>2%</b>	<b>2%</b>	<b>1%</b>
Rapid Transit or Bus Rapid Transit	43%	32%	18%	2%	2%	2%	1%
<i>Blue Line</i>	41%	27%	26%	2%	1%	2%	1%
<i>Green Line</i>	44%	32%	16%	2%	4%	2%	1%
<i>Orange Line</i>	40%	33%	19%	3%	2%	2%	1%
<i>Red Line</i>	45%	33%	15%	2%	2%	2%	1%
<i>Mattapan Trolley</i>	30%	42%	16%	8%	1%	1%	2%
<i>Silver Line BRT</i>	40%	35%	19%	1%	<1%	2%	2%
Commuter Rail	25%	59%	3%	2%	2%	5%	4%
Bus	41%	29%	24%	4%	1%	1%	<1%
Ferry	38%	44%	8%	1%	N/A	7%	2%



**Table A.2 - Percent of Riders Self-Identifying as Minority for Key Bus Routes by Survey Edition**

Line	2022-2023 Percent Minority
<b>System-Wide</b>	<b>70%</b>
1	66%
9	43%
10	49%
11	48%
15	87%
16	81%
21	84%
22	89%
23	90%
32	83%
39	67%
47	63%
57	53%
66	68%
71	53%
73	57%
86	60%
104	82%
111	78%
114, 116, & 117	71%
28 & 29	89%
34 & 34E	73%
43 & SL5	77%
61 & 70	65%
67 & 77	45%
8, 55 & CT3	71%

**Table A.3 - Percent of Riders Self-Identifying as Low-Income for Key Bus Routes by Survey Edition**

Line	2022-2023 Percent Low-Income
<b>System-Wide</b>	<b>83%</b>
1	81%
9	62%
10	72%
11	64%
15	91%
16	86%
21	91%
22	88%
23	94%
32	88%
39	78%
47	78%
57	70%
66	85%
71	87%
73	76%
86	84%
104	86%
111	90%
114, 116, & 117	85%
28 & 29	90%
34 & 34E	80%
43 & SL5	86%
61 & 70	78%
67 & 77	73%
8, 55 & CT3	76%